1. A capacitor of the type having a cathode and an anode and an electrolyte disposed between the cathode and the anode, the capacitor comprising

an electrochemical cathode comprising an aluminum current collector coated with a finely divided material,

an electrolytic anode comprising aluminum coated with aluminum oxide,

an electrolyte in contact with the finely divided material on the cathode and the aluminum oxide on the anode.

2. The capacitor of claim 1 wherein the electrolyte is substantially non-aqueous.

3. The capacitor of claim 2 wherein the electrochemical cathode functions by forming a double layer of charge at the interface between the finely divided material and the substantially non-aqueous electrolyte.

4. The capacitor of claim 2 wherein the finely divided material comprises carbon particles.

5. The capacitor of claim 4 wherein the carbon particles comprise at least one of carbon powder, carbon fibers, and graphite.

6. The capacitor of claim 2 wherein the electrochemical cathode functions by the presence of an oxidation reduction reaction within the finely divided material.

7. The capacitor of claim 2 wherein the electrochemical cathode comprises a metal oxide coating.

8. The capacitor of claim 2 wherein the metal oxide coating is ruthenium oxide.

9. The capacitor of claim 2 wherein the metal oxide is hydrous amorphous ruthenium oxide powder adhered to the aluminum current collector.

10. The capacitor of claim 2 wherein the cathode further comprises an adhesion layer between the finely divided material and the aluminum.

11. The capacitor of claim 10 wherein the adhesion layer comprises a carbon rubber coating.

12. The capacitor of claim 11 wherein the adhesion layer is from 0.5 to 2.0 mil thick.

13. The capacitor of claim 12 wherein the electrochemical capacitor comprises a metal oxide adhered to the aluminum with the adhesion layer.

14. The capacitor of claim 13 wherein the metal oxide is hydrous amorphous ruthenium oxide powder.

15. The capacitor of claim 2 wherein the substantially non-aqueous electrolyte comprises an ethylene glycol solvent.

16. The capacitor of claim 2 wherein the anode has a larger surface area than the cathode.